

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Thomas G. Lacey, et al. Art Unit :
Serial No. : Examiner :
Filed : Herewith
Title : MOLDING OF FASTENING HOOKS AND OTHER DEVICES

Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Prior to examination, please amend the application as follows:

In the Specification:

Please substitute the enclosed, revised written description for the original written description filed in the parent case. The substitute written description contains numerous grammatical and spelling corrections, but does not add any new matter.

In the Claims:

Please cancel claims 1-77 and add the following new claims 78-111:

78. (New) A mold for integrally forming from a moldable resin a large multiplicity of hook members on a sheet or strip-form base, the mold having hook member-shaped cavities located at the surface of the mold, at least many of the hook member-shaped cavities each having a tapered pedestal chamber for forming a pedestal of a corresponding hook member, the pedestal chamber having a leading edge and a trailing edge that slope inwardly toward each other

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Victor Mariano
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Victor Mariano

at similar angles to the mold surface to define a truncated, broad-based pyramid when viewed in side profile, and

a crook chamber for forming a crook portion of the corresponding hook member, the pedestal chamber and crook chamber being contiguous.

79. (New) The mold of claim 78 wherein the pedestal chamber has a base width greater than about the height of the hook member-shaped cavity, and at half height of the hook member-shaped cavity has a width equal to at least about half the height of the hook member-shaped cavity.

80. (New) The mold of claim 78 wherein the hook member-shaped cavities are of fixed form, adapted to remain closed as the hook members are removed, the pedestal chamber being tapered to form a space which is wider than the crook chamber, such that space is provided for a formed hook member to substantially recover the shape of the cavity while it is being pulled out of the cavity and before it is completely removed from the cavity.

81. (New) The mold of claim 78 in the form of a mold roll constructed for continuous molding of a continuous strip-form fastener product.

82. (New) The mold of claim 78 wherein the pedestal chamber tapers at a taper rate of at least 0.6 to 1 up to at least the half height of the hook member-shaped cavity.

83. (New) The mold of claim 78 wherein the cavity profile defines a hook having a crook portion, at least 40 percent of the width of the crook portion projecting laterally from the pedestal portion.

84. (New) The mold of claim 78 wherein the width of the pedestal chamber that corresponds to the width of the crook chamber corresponds with a pedestal height of at least 30 percent of the total pedestal height above the base.

85. (New) In a molding apparatus for continuously molding a strip-form product having an array of individual elements with molded stems extending from a strip-form base, the apparatus comprising:

a series of circular mold plates held together face to face to form a rotating cylindrical mold roll defining, at outer edges of the plates, rows of mold cavities extending into the mold roll for molding the elements, and

an opposed forming member having a surface defining, together with the edges of the plates, a mold gap for forming the strip-form base integral with the molded stems when moldable resin is applied to the gap under conditions that cause the resin to fill the mold cavities, the improvement wherein

the mold cavities extend into the mold roll to a depth of less than about 0.025 inch; and
the gap has a nominal thickness of less than about 0.003 inch, for forming a correspondingly thin fastener tape.

86. (New) The molding apparatus of claim 85 wherein the opposed member is constructed to apply molten plastic to the roll.

87. (New) The molding apparatus of claim 85 wherein the edge surfaces of the plates directed toward said gap are formed to positional accuracy from plate to plate of at most 0.001 inch with respect to a mean value at the edge of the plates.

88. (New) The molding apparatus of claim 87 wherein the positional accuracy is at most 0.0005 inch.

89. (New) The molding apparatus of claim 85 wherein the molding cavities are shaped to form fastener elements for engaging loops.

90. (New) The molding apparatus of claim 89 wherein the molding cavities are hook-shaped.

91. (New) The molding apparatus of claim 85 wherein the mold cavities extend into the mold roll to a depth of less than about 0.015 inch.

92. (New) The molding apparatus of claim 91 wherein the mold cavities extend into the mold roll to a depth of less than about 0.010 inch.

93. (New) The molding apparatus of claim 85 wherein the molding cavities are of form produced by photochemical machining.

94. (New) The molding apparatus of claim 85 wherein the molding cavities are of form produced by laser milling.

95. (New) The molding apparatus of claim 85 wherein the molding cavities are arranged with a density of at least 1200 cavities per square inch.

96. (New) The molding apparatus of claim 85 wherein the plates each have a thickness of less than about 0.004 inch.

97. (New) The molding apparatus of claim 85 wherein the molding cavities have a surface roughness of less than about 75 microinches.

98. (New) The molding apparatus of claim 85 wherein the gap has a nominal thickness of less than about 0.002 inch.

99. (New) The molding apparatus of claim 85 wherein the mold plates comprise a hardened copper alloy.

100. (New) The molding apparatus of claim 85 wherein the outer edges of the mold plates are of form produced by photochemical machining.

101. (New) The molding apparatus of claim 85 wherein the mold plates also have inner diameters defined by edges of form produced by photochemical machining.

102. (New) A method of forming a multiplicity of elements with stems integrally molded with and extending from a common strip-form base, the method comprising supplying a continuous flow of resin to the gap of the apparatus of claim 85, under conditions causing the resin to fill the molding cavities; cooling the resin on the rotating mold roll; and then stripping the cooled resin from the mold roll.

103. (New) The method of claim 102 wherein the resin has a melt flow index greater than 5.

104. (New) The method of claim 103 wherein the resin has a melt flow index greater than 10.

105. (New) The method of claim 104 wherein the resin has a melt flow index greater than 20.

106. (New) The method of claim 102 wherein the molding cavities are shaped to form fastener elements.

107. (New) The method of claim 106 wherein the molding cavities are hook-shaped.

108. (New) The method of claim 102 wherein the resin has a tensile yield strength of about 5,000 to 5,300 pounds per square inch.

109. (New) The method of claim 102 wherein the resin has an elongation of at least 10 percent.

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110. (New) A method of forming a rotatable mold roll for continuously molding a strip-form product having an array of features with stems integrally molded with and extending from a side of a strip-form base, the method comprising the steps of

forming a series of circular mold plates, each having an inner diameter formed simultaneously with an outer diameter of the plate such that the inner and outer diameters of the plate have a concentricity of 0.001 inch or better, and each plate defining a row of molding cavities extending about its periphery; and then

stacking the plates about a central mandrel with a single peripheral surface that engages the inner diameters of all of the mold plates, thereby accurately positioning the peripheral surfaces of the mold plates to form a cylindrical molding surface with a diametrical accuracy of within 0.001 inch.

111. (New) The method of claim 110 wherein the inner and outer diameters of the plates are defined by etched edge surfaces.

REMARKS

As a result of the above amendment, claims 78-111 are presented for examination, with claims 78-85 corresponding generally to claims restricted from prosecution in the parent case.

Filed herewith is a check in payment of the excess claims fees required by the above amendment. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: December 21, 2008



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